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AUTHOR Ueda, Reiko
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ABSTRACT

Two studies investigated behavioral problems in childhood. Study 1 longitudinally investigated similarities and differences in enuresis and nailbiting among Japanese and American children. Incidences of enuresis decreased as subjects' age increased. Socio-cultural and family tolerance were related to incidences of nailbiting. In Study 2, changes in behavioral problems of 1- to 17-year-old children and determining factors were investigated. Findings indicated that quantities and qualities of behavioral problems changed with children's development. In the process of change, both child and environmental factors contributed dynamically. These factors included family attributes in preschool years, school life and sibling relationship in school years, and temperament and character in adolescence. It is concluded that findings reveal a need for a comprehensive developmental approach to the behavioral problems of children that takes into consideration family, school, and community contexts. Four figures and six tables are included. (RH)

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LONGITUDINAL STUDY OF DEVELOPMENTAL PROBLEMS OF CHILDREN

- COMPARISON BETWEEN JAPAN AND U.S.A.-

By

Reiko UEDA, Doctor of Medical Science, Master in Letters

Tokyo Metropolitan College of Allied Medical Sciences
Higashiogu, 7-2-10, Arakawa-ku Tokyo, Japan

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Behavioral and/or developmental problems such as thumbsucking, nail-biting, or enuresis are not rare in children. Gesell,A.[1], Mcfarlane,J.W.[2] and Valentine,C.W.[3] suggested that parents often perceived these behaviors as abnormal. While some of these behavioral problems are transient, others could be early signs of serious emotional, behavioral and/or physical problems.[4] Although frequencies and/or courses of these bahavioral problems had been reported in relation to physical attributes such as age, sex and heredity,[5] few studies have done in the context of the socio-sultural environment.

The primary purpose of this study is to investigate the similarities and differences of certain specific hehavioral problems between Japan and U.S.A. through longitudinal study of children. Also, changing patterns of these developmental problems and related factors will be analyzed concerning to Japanese subjects.

Subjects : Data were collected from 53 normal children and their families for this study. These children were born in an urban community in Tokyo metropolitan area in 1971, visited the health center for compulsory health check up at one year of age, and have been followed with various intervals over a 17 year-span. Fourty-five percent of parents were junior high school graduates, another 45 percent were high school graduates and 5 percent were college graduates(This sample was representative of the urban area of Tokyo at that time).

The U.S.A. sample consists of 116 subjects who were born in 1928 - 29 and were enrolled in the study of the Berkeley Child Guidance Clinic carried by Mcfarlane, J.W. etc.[2]

Method :

1. Longitudinal study: The parents of the children in Tokyo were asked about the children's behavioral problems and habits by questionnaire when their children were 1,2,3,4,5, 8 and 11 years old. At 17 years of age, the children themselves were asked about their own problems and habits by questionnaire. Also, all children were observed during developmental or intelligence

tests at 1 year and 3 years of age and the parents were interviewed at the same time.

2. Comparison between Japan and U.S.A.: For U.S.A. subjects, data of behavioral problems by Mcfarlane, J.W. etc. from 21 months to 14 years of age were used for the comparison. Subjects and methods utilized for comparison of certain specific behavioral problems between Japan and U.S.A. are shown on Table 1.

3. Multivariate analysis: In order to find the determining factors of these problems, data of 51 Japanese subjects who responded to all items of the questionnaire given at 1,3,5,11 and 17 years of age were given to multivariate analysis. Procedures of analysis were as follows. Step 1. The number of behavioral problems for each person were scored at each of age of 12 month, 3, 5, 11 and 17 respectively. These scores constituted the dependent variable. Step 2. Independent variables were shosen from information related to behavioral problems at given ages and were constructed as item-categories which ranged from 2 - 3 scales. Step 3. Multivariate analysis was used to analyze the relationship between the behavioral problem score(dependent variable) and independent variables at given ages.

Results :

1. Enuresis and Nailbiting between Japan and U.S.A.

In general, the incidences of enuresis decreased as subjects' age increased in both countries(Figure 1). However, there was difference between two countries in boys's incidences of enuresis at ages of 3, 5 and 11. The incidences in Japanese boys were higher at 3 and 5 years of age (44% vs 16%, 26% vs 8%) while that in American boys were higher at 11 years(3% vs 15%). There was no difference in girls at any age between two countries. Nailbiting increased as subjects' age increased and incidences in girls were higher than in boys in both countries. But incidences of nailbiting at age 11 in U.S.A. subjects was twice as much as that in Japanese subjects. However, if five grades of nailbiting used by

Mcfarlane, J.W.etc. were modified to four grades(that is, if grade 4 - mild periodic biting of nails or pulling of rough nails was assumed as equivalent to grade 5 - never bits nails), the incidences became almost the same in both countries.

2. Change of Bahavioral Problem Score

Table 2 shows the correlation of behavioral problem scores of Japanese subjects at each age of 12 month, 3, 5, 11 and 17. Significant correlations were found between behavioral problem scores at age 5 and 12 month;age 5 and 3; and age 5 and 11. However, none of these correlations was above .45. Correlations were low between age 17 and other ages.

Different courses of behavioral problem scores were obtained in the 53 cohort children who had completed records of behavioral problem at 5 stages from 12 month to age 17(Figure 3 & 4). Based on the stage-state analysis[9] of the behavioral problem scores, one thirds of subjects were defined as high score group while the rest of two thirds belonged to low score group and both groups were followed until age 17. Thirty-nine percent of subjects(15 out of 39) stayed in the low score group through these years, but 26%(10 out of 39) changed to the high score group taking various courses. On the other hand, there was no subjects who stayed in the high score group through these years. Thirty-six percent(5 out of 14) in the high score group at 12 month stayed in the same group by age 11 but all changed by age 17.

3. Behavioral Problem at given Ages and related Factors

Table 3 presents the result of the multivariate analysis on behavioral problem scores and variables such as biological and social attributes at age 1. Combinations of four items such as illness at 12 months, number of siblings, mother's educational level and a handicapped parent yielded a multiple correlation coefficient of .5153.

Table 4 shows the result of the same analysis on the bahavioral problem scores and variables at age 3. These item such as fathers' type of occupation, degree of parents' talking to children and mother's educational level yielded a multiple correlation coefficient of .4676. Also, table 5 and table 6 present results of the same multivariate analysis at age 11 and age 17. While four items such as illness by 11, degree of enjoying school, present health status and sibling relations produced a high multiple correlation coefficient of .7116 at 11 yr., five items such as mothers's type of occupation, mother's perception of subjects as a easy child during infancy, health status at age 17, father's educational level and the childś inferiority complex yielded a multiple correlation coefficient of .6184.

Discussion:

1. Socio-cultural Factors and Behavioral Problems

Opinions on the prognosis of behavioral problems in early childhood have not necessarily reached to an agreement among researchers. Pathological symptoms and signs in early stage of life are generally viewed rather pessimistically,while behavioral problems such as school refusal at younger ages are observed optimistically.[10] The reasons of the disagreement may depend not only on the different samples of each researcher but also on the degree of tolerance of family members and societies around the subjects. In addition, there are few prospective longitudinal studies from infancy in general populaltion.[11) 12)]

Analyzing the data of the prospective-longitudinal study since early childhood, comparison of certain specific bahavior problems between Japan and U.S.A. was conducted. Incidences of enuresis was found to decrease as subjects' age increased, which may implicate that enuresis associated with development of bladder control. However, there was difference in boys'

incidences between two countries and the incidences in Japanese boys were higher at 3 and 5 years of age. Fourty four percent of our study was similar to 44% of Abe et al.(1982) on Japanese 3 year old boys and 49% of Chamberlin (1974) on American 3 year old children. In addition, there was no difference in girls between two countries. These results may suggest a generation gap of mother's perception on enuresis in U.S.A.[14)]

General tendency of nailbiting was similar between two counties, if evaluation scales of 5 grades by Mcfarlane,J.W. et al. was modified to 4 grades which may indicate the difference of social tolerance toward anilbiting between two countries. Hoewever, further study should be needed, because different methods of data collection may produce different incidences.

2. Change of Behavioral Problems and Related Factors

The behavioral problem scores at 5 yr. correlated significantly with that at 1 yr. and 3 yr. as well as 11 yr. But no significant correlations were observed between the scores at 17 yr. and the scores at other ages. Difference of the informant (mother until 11 yr. and the children at 17) may have influenced these results, while it is also possible that only well-behaved subjects were followed until age 17, as expected in any longitudinal study. In addition, there were indications in the data that significant developmental change[15)] as well as mother's perceptual change might have occurred during infancy and pre-school years.

From the analysis of special cohort of low and high behavioral problem score groups, 28% in low score group at 1 yr. changed into high score group while 50% in high score group at 1 yr. changed into low score group at 3 yr.

Multivariate analysis revealed that family attributes as well as physical health correlated well with behavioral problems both at 1 yr. and 3 yr..

However, qualities of items at each age were different, which may indicate that mothers of junior high school graduate with normal and first born child had children with high score at 1 yr. while mothers of high school graduate who perceived themselves not talking adequately to children tended to have children with high score at 3yr.. In another words, qualities of mothers' perception of behavioral problem change dynamically as children grow and are influenced not only by childrenś factors but also by parent's factors.

Relations between school life and behavioral problems at 11 yr. were found as might be expected. Next to illness by 11 yr., "not pleasant in school life" and "sibling relationship" were found as the items highly correlated to the behavioral problem scores.

Finally at age 17, "health status","strong feeling of inferiority", "mother not working" and "father's educational level -junior high school graduate" were variables correlated to the behavioral problem scores.

These results may suggest that although quantities and qualities of behavioral problems change as children grow, not only children's factor such as health condition but also family attributes - parent's level of education and kind of occupation in pre-school age, sibling relations and school life in school age, temperament and character in adolescence during the process of these change were highly correlated with behavioral problems in childhood.

Summary:

The two studies were conducted to investigate behavioral problem in childhood.

1. The similarities and differences of enuresis and nailbiting between Japan

the U.S.A. were analyzed through longitudinal study of children. It was suggested that there was generation gap in the boy's incidences of enuresis, and socio-cultural as well as family torelance was related with incidences of nailbiting.

2. Changes of behavioral problems and determing factors were investigated through prospective-longitudinal study from 12 mon. to 17 yr.. Results indicated that quantities and qualities of behavioral problem changed along children's development, and in the process of change, both children's factors and environmental factors such as family attributes in preschool years, school life and sibling relationship in school years and temperament as well as character in adolescence contributed dynamically.

These results suggest a need of comprehensive - developmental approach to these behavioral problems of children in the context of family, school and community.

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Table I Subjects and Method

	Japan(Tokyo)	U.S.A.(California)
Number of subject	261	116
Birth Year	1971	1928 - 1929
Method of data collection	Longitudinal & Questionnaire	Longitudinal & Interview
Informant	Mother	Mother
Duration of survey	2 - 11 yrs of age	21 months - 14 yrs of age

Table 2 Correlation Coefficients of Behavioral Problem Scores

	12mo.	3 yr.	5 yr.	11yr.	17yr.
12mo.	1.0000				
3 yr.	-0.0565	1.0000			
5 yr.	0.4611***	0.2572*	1.0000		
11yr.	-0.1248	0.0091	0.3431**	1.0000	
17yr.	-0.0258	0.1090	0.0523	0.0291	1.0000

***p<.001, **p<.02, *p<.05

Table 3 Category - Weight by Multivariant Analysis at 1 yr.

Item · Category	N = 53	category.weight	Category weight	Partial R.
		-8.0 -7.0 -6.0 -5.0 -4.0 -3.0 -2.0 -1.0 0 1.0 2.0		
Illnes at Age 1 yr.				
None	46	**	0.435	
Slight	6	********	-2.157	0.3692
Moderate, Severe	1	*************************	-7.085	
N. of Siblings				
0	25	****	1.204	
1	19	****	-0.990	0.3132
More than 2	9	****	-1.254	
Parents Handicapped				
None	50	*	0.210	0.3008
Yes	3	**********	-3.499	
Mothers' Educational History				
Junior High School Graduate	28	***	0.727	
High School Graduate	21	**	-0.513	0.2711
College Graduate	4	*********	-2.397	
Mutiple R.	0.5153			
Coefficient of Determination	0.2656			

Table 4 Category - Weight by Multivariant Analysis at 3 yr.

Item · Category	N = 53	category.weight	Category weight	Partial R.
		-3.0 -2.0 -1.0 0 1.0 2.0 3.0		
Fathers' Type of Work				
Managers and Professional	6	********** |	-2.411	
Sales and Service Workers	21	**** |	-0.852	0.1211
Skilled and Unskilled Workers	26	| ******	1.245	
"Have you talked to a child adequately?"				
No	46	*** |	-0.454	0.2812
Yes	7	| **********	2.982	
Mothers' Educational History				
Junior High School Graduate	28	***** |	-1.073	
High School Graduate	21	| *******	1.429	0.0302
College Graduate	4	|	0.008	
Multiple R.	0.4724			
Coefficient of Determination	0.2232			

Table 5 Category - Weight by Multivariant Analysis at 11 yr.

Item · Category	N = 53	category.weight	Category weight	Partial R.
		-2.0 -1.0 0 1.0 2.0 3.0 4.0 5.0		
Disease by Age 11				
Yes	4	|**********	4.730	0.3348
No	49	** |	-0.386	0.3098
School Life				
Not pleasant	1	|********	2.247	
Pleasant a little bit	25	|*****	1.091	0.3921
Pleasant	27	****** |	-1.093	0.4533
Illnes at Age 11				
Yes	6	|**********	2.283	0.3388
No	47	** |	-0.291	0.3309
Sibling Relationship				
Moderate or Bad	26	|***	0.714	0.2973
Good	22	*** |	-0.515	0.3575
No Sibling	5	******* |	-1.445	
Multiple R.	0.7116			
Coefficient of Determination	0.5064			

Table 6 Category - Weight by Multivariant Analysis at 17 yr.

Item · Category	N = 51	category.weight	Category weight	Partial R.
		-1.0 -0.5 0 0.5 1.0 1.5 2.0		
Mothers' Type of Work				
Home-Maker	18	|*******	0.848	0.3622
Working	33	**** |	-0.462	
Mother's Perspective of Infant				
Good-natured easy to deal with	20	|*****	0.650	
Neither easy nor difficult	28	*** |	-0.347	0.3326
Often cried, difficult to deal with	3	********* |	-1.099	
Health Status at 17 years old				
Not well	4	|***************	1.732	0.3122
Well	47	* |	-0.147	
Fathers' Educational History				
Junior High School Graduate	26	|****	0.446	
High School Graduate	20	*** |	-0.339	0.3062
College Graduate	5	******** |	-0.965	
Feeling of Inferiority at 17 years old				
Extreme	7	|******	0.752	0.1893
Moderate and None	44	* |	-0.120	
Multiple R.	0.6184			
Coefficient of Determination	0.3824			

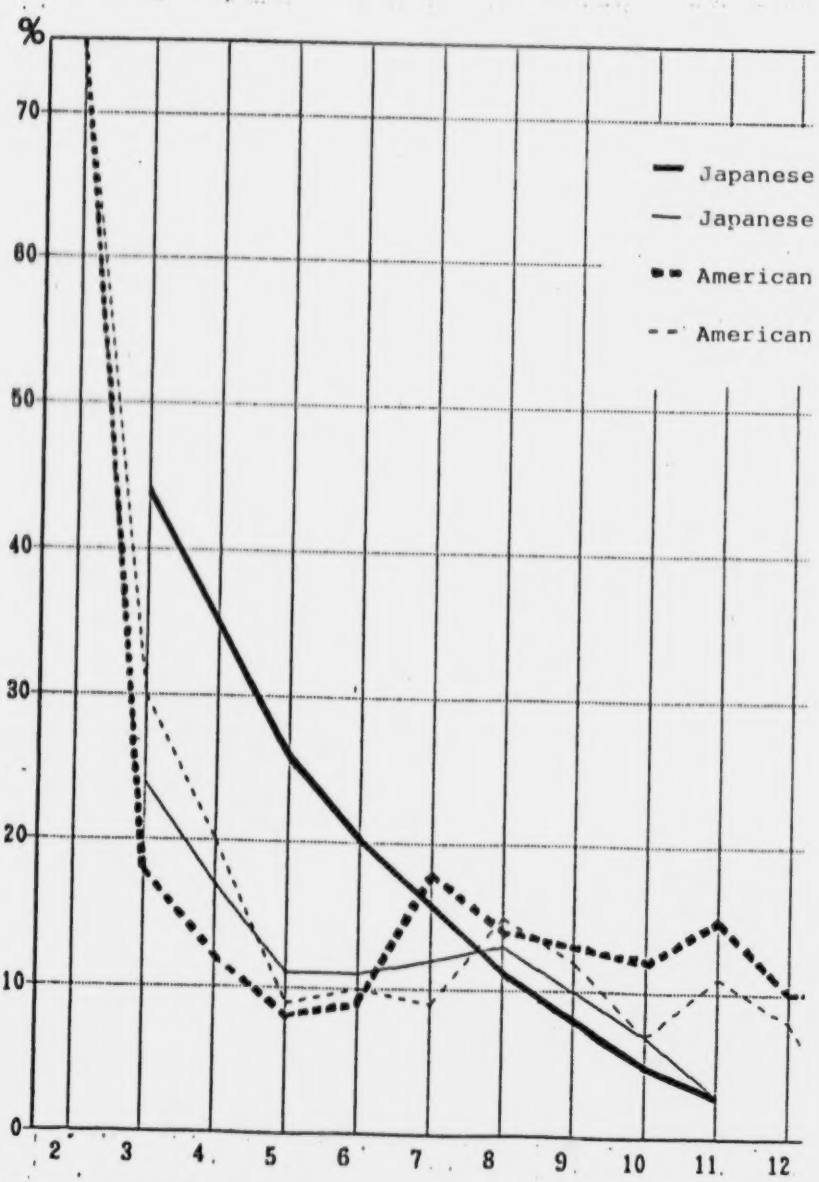


Fig. 1 Incidences of Enuresis at ages between Two Cour

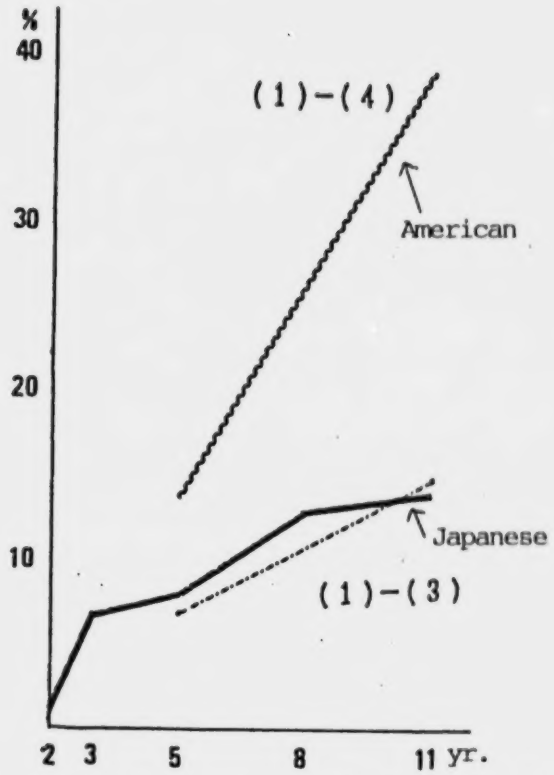


Fig. 2 Incidences of Nailbiting at ages between Two Countries

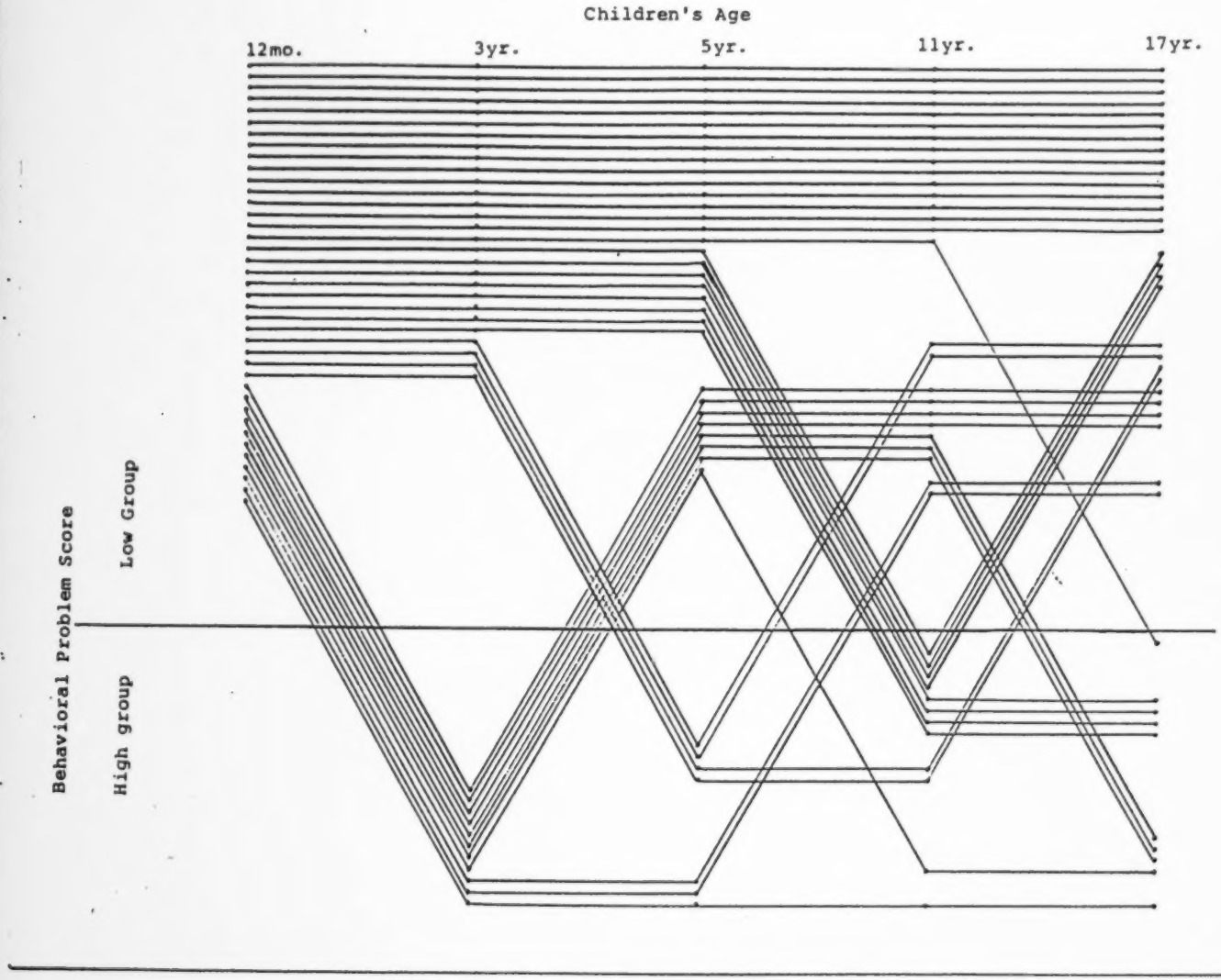
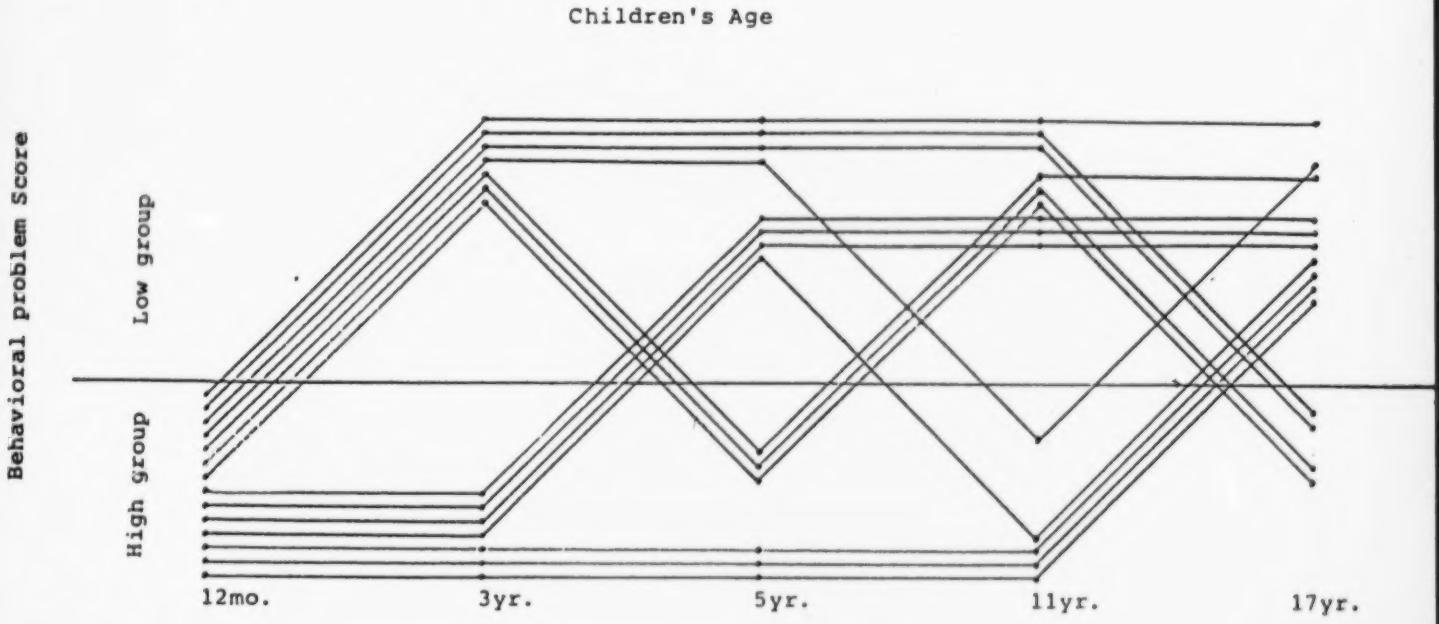


Fig. 3 Long-term follow-up of Behavioral Problems from 12 mon. to 17 Yr.
-Low Score Group at 12 mon.



N = 14

Fig. 4 Long-term follow-up of Behavioral Problems from 12 mon. to 17 yr.
- High Score Group at 12 mon.